

Rhectognathus, A New Group in the Lindenius Complex (Hymenoptera: Sphecidae: Crabronini)

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There is before me a short series of small Crabronine wasps which represent a new group closely allied to the old world *Encopognathus*. They are particularly interesting in that they exhibit certain features that parallel in some measure those possessed by the more primitive members of the Oxybelini and while probably not ancestral to this group, nevertheless, offer a suggestion as to what that original and probably now extinct stock may have been like.

RHECTOGNATHUS¹ new subgenus.

Head with mandibles simple and acute apically, strongly excised beneath, internally bidentate on basal half; eyes naked; antennal sockets distant, the distance between them almost twice the distance between them and the nearest eye margin; antennae of both sexes 12-segmented, the pedicel and the first and second flagellar segments subequal in length, scapes compressed and evenly, arcuately, inwardly bowed—strongly so in the male, weakly in female; ocelli arranged in a very flat triangle; maxillary palpi 6-segmented, labial 4-segmented. Females with a well developed psammophore.

Thorax subtly punctured; mesopleura rounded anteriorly, not sharply margined (i.e. without an epicnemium), smooth, shining, and finely punctate; mesepisterna without a precoxal carina before the middle coxae; suture between the mesonotum and the scutellum simple, not dilated laterally; middle tibiae with one small calcaria apically.

Wings with the marginal cell of the fore wing rather long, squarely truncate apically, the transverse cubital vein distinctly angulate, perpendicular above, sharply inclined basad below to cubitus, joining the radius about middle of marginal cell, recurrent vein joining cubitus about middle and not causing it to be appreciably angled backward; first discoidal cell trapezoidal. Anal lobe of hind wings not longer than the submedian cell.

Abdomen depressed; first and second segments broadly sessile; first and second tergites with a sharp edge laterally as in *Belomicrus* and somewhat inflexed, remaining tergites inflexed

¹ ρηκτος, broken + νπαθος, jaw, in allusion to the structure of the mandibles.

but without sharp margins laterally; pygidial area present in both sexes; first three sternites flatly convex, remainder flatly concave.

Genotype: *Encopognathus* (*Rhectognathus*) *pectinatus* new species.

***Encopognathus* (*Rhectognathus*) *pectinatus* new species.**

♂. Length 5 mm. Black with a nigrocaeruleous tinge particularly on face; the following light yellow: scapes, pedicel and flagellum anteriorly and beneath, save the last segment of the last which is abruptly entirely black; pronotal tubercles; post-scutellum; fore femora with a stripe beneath, middle femora with a stripe anteriorly, all tibiae and tarsi. Abdomen with the first two segments black basally, apical half orange-rufous, remainder of abdomen orange-rufous. Clypeus and lower part of the front with appressed silvery pubescence; upper portion of face and vertex with very short, erect, rather sparse pile. Thorax with short sparse, suberect pubescence. Abdomen with sparse decumbent aeneous pubescence longer than that of thorax. Wings hyaline with a fuscous tinge; veins brown.

Head shining, finely, subtly punctured; clypeus medio-apically truncate and with a very flat, transverse, triangular, shining, impunctate bevel; scapes strongly compressed, strongly and evenly bowed inwardly, anteriorly with a longitudinal keel; pedicel and flagellum strongly compressed, the pedicel and the first flagellar segment strongly pectinate apically, the pedicel and the first and second flagellar articles subequal in length, the last flagellar segment strongly flattened and subspatulate; a short median longitudinal impressed line from the anterior ocellus; ocellar line about one and one-half times the length of the ocellocular line.

Thorax shining, with fine subtle puncturation; pronotum rounded anteriorly, not carinate, dorsally with a narrow, transverse shallow groove, semicircularly excised medially; mesonotum with puncturation similar to front but closer; mesopleura shining, anteriorly with sparse, fine puncturation, posteriorly along with the metapleura highly polished and impunctate; scutellum finely striato-punctate; postscutellum strongly convex, anterior margin strongly concave. Propodeum finely, irregularly, clathrately rugulose throughout, with the dorsal triangular area poorly defined, posterior face with a distinct pyriform median fovea which is smooth and shining within. Anterior tarsi with the first segment as long or longer than the remaining segments and somewhat flattened and distorted; middle tarsi with the first segment strongly bowed, subequal in length to the remaining

segments; hind tarsi with the first segment thickened and subequal in length to the remaining segments; middle and hind tibiae thickened apically and minutely spinose externally.

Abdomen depressed, cordiform, shining, with very fine, well separated, regularly disposed punctures; pygidium flat, subtriangular, the apex broadly rounded, beset with coarse, scattered punctures; second and third sternites flatly convex, remainder shallowly concave, the lateral margins of the tergites folded under to the ventral surface and imbricate with the lateral margins of the sternites.

♀. Length 6.5 mm. Black; the following light yellow: scapes, pedicel and flagellum beneath; pronotum dorsally on each side of the median excision with a short, narrow, transverse line, the tubercles; tegulae anteriorly and the axillary sclerites; posterior margin of the scutellum with a narrow line interrupted medially; postscutellum; fourth abdominal tergite with a narrow, indistinct, preapical fascia; fifth tergite with a broader, distinct preapical fascia; last tergite entirely, inflexed ventral portions of the fourth and fifth tergites; all tibiae and tarsi; fore femora save posterior basal half, middle and hind femora apically. The following fulvofuscous: mandibles medially; clypeus discally; pedicel and flagellum above; apical margins of the first three abdominal tergites. Clypeus except the triangular bevelate area, and the lower part of the front with appressed silvery pubescence; upper half of face and vertex with short, dark, erect, pubescence; abdomen with decumbent, rather sparse, aeneous pile.

Head with the face, save for the nitidous antennal scrobes, subopaque, and finely, semiconfluently acupunctate, temples aciculate; the scape not as strongly bowed as in the male, the anterior longitudinal keel very weak, pedicel but not the flagellum compressed as in the male, the pedicel and the first flagellar article simple, not pectinate: clypeus discally to apex with an equilateral triangular, shining, highly polished, impunctate bevelate area, medioapically truncate and 7-dentate; mandibular and temporal ammochætæ well developed.

Thorax similar to that of the male, the puncturation of the mesonotum, however, closer, and the scutellum aciculate; humeral, trochanteral, femoral and tibial ammochætæ well developed, the tibiae with a series on the fore as well as on the hind margin; a short tarsal comb present on fore tarsi which are flattened. Propodeum with the dorsal, posterior and caudal portion of the lateral faces shining and transversely, finely striate, the triangular dorsal enclosure and the median fovea of

the posterior face obsolescent. Legs similar to male but the spination of the middle and hind tibiae stronger.

Abdomen similar to male; pygidium triangular, the apex acute, beset with coarse scattered punctures.

Holotype.—♂, Claremont, CALIFORNIA (C. F. Baker) [Cornell University Type No. 1405]. *Allotype*.—♀, (same data as type). *Paratypes*.—3 ♂♂, Bryson, CALIFORNIA, April 25, 1917 (E. P. Van Duzee).

The closest allies of *Rhctognathus* are to be found in the old world Mediterranean and Aethiopian *Encopognathus* group with which it agrees in the characteristic venation of the fore wing and the naked eyes, but differs in possessing subtle puncturation and sculpture and in lacking an epicnemium and a precoxal carina on the mesepisterna before the middle coxae. Specimens of *Encopognathus* are very rare in collections and while a number of species have been described, these are known mainly only from the females. Kohl, however, in his monograph of the Palearctic Crabrones, notes the fact that he has before him a male² of an undescribed Indian species but does not state how many segments it has in the antennae, and I have consequently assumed that the males of *Encopognathus* possess the normal number of thirteen. In the Nearctic species before me, *Rhctognathus pectinatus*, the males have only twelve segments in the antennae, which will further serve to differentiate the *Rhctognathus* group from *Encopognathus*.

Kohl and various other authors consider *Entomognathus* and *Encopognathus* as merely subgenera of *Lindeni*. However, I believe that those groups in which the mandibles are excised beneath should be accorded a rank co-ordinate with that of *Lindeni*. Moreover, at present, I consider that the group with hairy eyes—*Entomognathus*—should be ranked as a genus distinct from those with naked eyes—*Encopognathus* and *Entomocrabro*. An unique female from the Putumayo or Rio Pachitea district of Peru before me agrees very well with Kohl's descriptions and figures of *Entomocrabro*,³ save that the first discoidal cell has a tendency to be trapezoidal rather than

² Ann. k. k. naturhist. Hofmus. Wien, 1915, xxix: 320.

rhomboidal. Until I have had an opportunity, consequently, to see more material of this group, particularly of the males, I regard it tentatively as a distinct genus closely allied to *Rhectognathus* and somewhat annectant between it and *Entomognathus*. I have seen no material of *Encopognathus* and know it only from the descriptions and figures of Kohl⁴ and Arnold,⁵ but as indicated above, it is indubitably very closely allied to *Rhectognathus* which may best be considered as only a subgenus of it.

At first glance, *Karossia* described by Arnold⁶ for a unique female from South Africa might be thought to belong to this group. However, Arnold states that the middle tibiae have two calcaria apically and I therefore think that because of this and certain other features it exhibits that it should be accorded tribal rank. The Karossiini apparently are rather generalized forms and no doubt represent a surviving remnant of that primitive stock from which have arisen two divergent lines, the Crabronines proper and the Oxybelines.

Nothing is known of the ethology of either *Encopognathus* or *Rhectognathus*, but from the well developed psammophore of the female in the latter, this group probably build their nests in sandy soil or dry ground, excavating their burrows in a manner similar to that of *Belomicrus* and *Anacrabro*.

Until further material is forthcoming, the following key will serve to distinguish the various groups of this complex.

A. Middle tibiae with two apical spurs; mandibles excised beneath; South African forms,

KAROSSINI: *Karossia* Arnold.

—Middle tibiae with one or no apical spurs....CRABRONINI: 1.

1. Abdominal tergites abruptly flexed under at the sides so that the ventral and dorsal portions of the tergites form a sharp edge at their junction; sternites flat or concave; New World forms.....*Anacrabro* Packard.

—Abdominal tergites not abruptly flexed under at the sides, at most with only the first two with a sharp edge laterally;

³ Verh. Zool. Bot. Ges. Wien, 1905, iv: 356.

⁴ Ann. k. k. naturhist. Hofmus, Wien, 1896, xi: 486.

⁵ Ann. Transvaal Mus. 1926, xi: 345.

⁶ Ann. Transvaal Mus. 1929, xiii: 409.

- sternites more or less convex.....2.
2. Mandibles simple and acute apically; ocelli arranged in a flat triangle; a distinct pygidial area present in both sexes.3.
- Mandibles bidentate, tridentate, or blunt and obliquely truncate apically; ocelli usually not arranged in quite so flat a triangle; a distinct pygidial area usually not present in the males*Crabroncs ceteri*.
3. Mandibles entire beneath; eyes naked; mesepisterna without a precoxal carina before the middle coxae,
Lindenius Le Peletier.
- Mandibles excised beneath4.
4. Eyes hairy; mesepisterna without a precoxal carina before the middle coxae; marginal cell of the fore wing elongate, the transverse cubital vein straight and inclined, the recurrent vein joining the cubitus distinctly beyond the middle and not causing it to be angled appreciably backward; anal lobe of the hind wing longer than the short submedian cell; abdominal tergites 2-5 (and 6 in the males) basally with a transverse furrow which curves caudad laterally and runs parallel to the lateral margins, basal portion covered by the preceding tergite, the lateral portions visible.....*Entomognathus* Dahlbom.
- Eyes naked; anal lobe of the hind wing shorter than the submedian cell; abdominal tergites not so constructed....5.
5. Marginal cell of fore wing short, the transverse cubital vein straight and inclined, joining the radial vein distinctly before the middle of the marginal cell; recurrent vein joining the cubitus distinctly before the middle and causing it to be appreciably angled backward; first discoidal cell rhomboidal; mesepisterna without a precoxal carina before the middle coxae and with a horizontal longitudinal foveolate furrow from the foveolate episternal suture to meso-metapleural suture just above the middle coxae; eyes at the level of the antennal sockets close together, sculpture and puncturation fine; Neotropical forms*Entomocrabro* Kohl.
- Marginal cell of fore wing longer, the transverse cubital vein distinctly angulate, the upper portion perpendicular, the lower part sharply inclined to cubitus, joining the radius about the middle of marginal cell; recurrent vein joining cubitus about at middle and not causing it to be appreciably angled backward; first discoidal cell trapezoidal;

eyes not so close together at the level of the antennal sockets *Encopognathus* Kohl.

Subgenera of *Encopognathus*.

Head and thorax coarsely sculptured; mesepisterna sharply margined anteriorly (i.e. with an epinenium), and with a precoxal carina before the middle coxae; males with 13-segmented antennae; Old World forms,

Encopognathus Kohl.

Head and thorax subtly punctured at most; mesepisterna rounded anteriorly, without a sharp margin, and without a precoxal carina before the middle coxae; males with 12-segmented antennae; females with a psammophore; New World forms..... *Rhectognathus* new subgenus.

New Organization for Amateur Entomologists.

In the March issue of *Hobbies* magazine appeared an extensive article on butterflies, by Frank Clay Cross, together with an advertisement announcing the formation of a new organization for amateur entomologists. The aims of the new group, which is known as the Entomologists' Exchange Association, are as follows:

1. To foster a more scientific attitude toward the study of butterflies, moths, beetles and other insects by amateur collectors throughout boreal America, and to encourage more persons to become purposeful collectors, to the end that our knowledge of the various species may be extended by more widespread and intensive research.

2. To assist amateur collectors with appropriate information, and in the identification of specimens.

3. To facilitate the exchange of entomological specimens among collectors, both amateur and professional, in various parts of North America.

While the Entomologists' Exchange Association is primarily to help amateur collectors, professional entomologists are also invited to participate in its activities, and to cooperate with its organizers in accomplishing the aims which have been set for it. It is a purely non-profit organization. Inquiries and offers of assistance should be addressed to Frank C. Cross, 1362 Race Street, Denver, Colorado.